SAE The Engineering Society For Advancing Mobility Land Sea Air and Space®
INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE STANDARD

SAE AS7110/8

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Submitted for recognition as an American National Standard

NATIONAL AEROSPACE AND DEFENSE CONTRACTORS ACCREDITATION PROGRAM REQUIREMENTS FOR DIFFUSION WELDING

1. SCOPE

This Aerospace Standard (AS) is to be used to supplement AS7110. In addition to the requirements contained in AS7110, the requirements contained herein shall apply to suppliers seeking NADCAP accreditation for diffusion welding.

2. REFERENCES

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15086-0001.

AS7110 National Aerospace and Defense Contractors Accreditation Program (NADCAP) - Requirements for Welding

3. REFERENCE REQUIREMENTS

3.1 Applicable customer specifications shall be available at the facility.

4. MATERIALS/MATERIAL CONTROL

4.1 The marking, input, and stop-off materials called out in detailed procedures shall be used.

4.2 Sufficient trim material shall be provided so that test samples for all routine microstructural and mechanical property testing can be obtained without destruction of parts.

4.3 The process control specimen shall represent the production configuration and process.

4.4 Sample structures shall be approved by the purchaser.

4.5 Material parameters and properties shall be as specified on the drawing.

4.6 The incoming material grain size shall conform to customer requirements.

4.7 Tooling, lubricant, and other material used during processing shall be compatible with the base material.

5. EQUIPMENT CONTROL

5.1 Part thermocouples shall be calibrated by a documented procedure.

5.2 Hot presses and furnaces shall be qualified and controlled in accordance with applicable customer specification.

6. QUALIFICATION OF WELD PROCEDURES/SCHEDULES

6.1 Weld procedures/schedules shall identify those parameters specified by the applicable customer specifications.

6.2 Welding procedure qualification records shall be maintained in accordance with applicable customer specifications.

6.3 All other welding processes used for assembly shall be performed by qualified personnel in accordance with qualified procedures and using qualified equipment if required.

7. PROCESS CONTROL

7.1 Cleaning

7.1.1 Sufficient stock thickness allowances shall be made to perform post bonding chemical cleaning.

7.1.2 Parts shall be cleaned by the detailed procedure.

7.1.3 Parts shall be clean and free of contaminants detrimental to welding.

7.1.4 Part surfaces to be welded shall have a 64 microinch finish or better.

7.1.5 Cleaning processes shall be subject to periodic process control tests.

7.1.6 After cleaning, parts shall be welded within the maximum time allowed by detailed procedures.

7.1.7 The part pack evaluation and scaling process shall assure a leak free seal.

7.2 Stop-off Application

7.2.1 Stop-off shall be applied to the part by detailed procedure.

7.2.2 Provisions shall be made to prevent application of stop-off in areas to be welded.

7.2.3 Stop-off shall prevent unintentional welding and it shall be effective.

7.2.4 The stop-off shall be a non-contaminant to the surface to which it is applied.

7.3 Furnace Loading

7.3.1 Parts shall be loaded in accordance with the detailed procedure.

7.4 Thermocouples

7.4.1 The proper type and number of thermocouples shall be placed in the proper locations in order to measure weld temperatures of the parts and the tool-face temperature by detailed procedures.

7.5 Atmosphere

7.5.1 Inert gas measurements shall be made in accordance with the detailed procedure.

7.5.2 The vacuum measurements shall be made in accordance with the detailed procedure.

7.6 Thermal Cycle

7.6.1 The pressure, temperature, and soak times shall conform to the detailed procedures.

7.6.2 The method of determining soak time shall conform to the detailed procedure.